Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of optimally adjusting an imaging process parameter in the preparation of a lithographic printing surface, said method comprising the steps of:
   a) imaging a test pattern on a lithographic printing precursor to create by means of said imaging an imaged lithographic printing precursor using at least one write radiation beam;
   b) converting said imaged lithographic printing precursor into said lithographic printing surface;
   c) reading back said test pattern from said lithographic printing surface using a radiation source impinging on said test pattern and a radiation detector disposed to measure the reflected radiation from said test pattern; and
   d) analysing said reflected radiation to determine optimal adjustment for said imaging process parameter.

2. (Original) The method of claim 1 wherein said imaging process parameter is exposure level.

3. (Currently Amended) The method of claim 1 wherein said imaging process parameter is used in determining the focusing of the write radiation ~~source~~ beam onto the surface of said lithographic printing precursor.

4. (Currently Amended) The method of claim 1 wherein:

a) said imaging is done using a plurality of write radiation beams;

b) said imaging process parameter is the relative exposure of said plurality of write radiation beams; and

c) each individual beam of said plurality of write radiation beams is adjusted to impart a substantially equal exposure to said lithographic printing precursor.

5. (Original) The method of claim 1 wherein said test pattern is a solid pattern imaged with all of said at least one write radiation beams switched on.

6. (Original) The method of claim 1 wherein said test pattern is a pattern of imaged and non-imaged areas varying in a known manner.

7. (Original) The method of claim 1 wherein said radiation source is a laser source.

8. (Original) The method of claim 7 wherein said laser source is an auxiliary laser source.

9. (Original) The method of claim 7 wherein said laser source is an infrared laser.

10. (Original) The method of claim 7 wherein said laser source is an auxiliary laser source also operative in a system for controlling the focus of said at least one write radiation beam.

11. (Original) The method of claim 1 wherein said radiation source is also used to perform said imaging.

12. (Original) The method of claim 1 wherein said radiation detector is a photosensitive detector.

13. (Original) The method of claim 1 wherein said radiation detector is an infrared detector.

14. (Original) The method of claim 1 wherein said radiation detector is also operative in a system for controlling the focus of said at least one write radiation beam.

15. (Original) The method of claim 1 wherein said analysing step comprises performing a mathematical curve fit to the measurements of said reflected radiation.

16. (Original) The method of claim 1 wherein said converting comprises passing said lithographic printing precursor through a processing line.

17. (Original) The method of claim 1 wherein said converting is done simultaneously with said imaging step.

18. (Original) The method of claim 1 wherein said converting comprises removing debris generated by said imaging while said imaging of said lithographic printing precursor is in progress.

19. (Currently Amended) A method of calibrating a system for imaging a lithographic printing precursor comprising the steps of:

a) forming a test pattern on said lithographic printing precursor;

b) converting said lithographic printing precursor into a lithographic printing surface;

c) measuring the reflectivity of said test pattern on said lithographic printing surface; and

d) adjusting the calibration of said system based on the measured reflectivity;

wherein the formation of said test pattern and the measurement of said reflectivity is performed using the same imaging system.

20. (Currently Amended) A method of calibrating imaging process parameters in a direct on-press imaging system comprising the steps of:

a) forming a test pattern on a lithographic printing precursor;

b) converting said lithographic printing precursor into a lithographic printing surface;

c) measuring the reflectivity of said test pattern on said lithographic printing surface; and

d) adjusting the calibration of said imaging system based on the measured reflectivity.

21. (Original) The method of claim 20 wherein said converting step is accomplished by running the press for sufficient printing cycles after said imaging step to perform the conversion of said lithographic printing precursor into said lithographic printing surface.

22. (Original) The method of claim 20 wherein said lithographic printing precursor is prepared by applying the imageable coating directly to the press cylinder.

23. (Original) The method of claim 22 wherein said applying comprises spraying a substantially liquid coating directly onto the press cylinder.

24. (Currently Amended) An apparatus for generating an optimally imaged lithographic printing surface comprising:

a) means for imaging a test pattern on a lithographic printing precursor and converting said lithographic printing precursor into a lithographic printing surface;
b) a radiation source disposed so as to direct its radiation onto the imaged test pattern;
c) a radiation detector disposed so as to receive reflected radiation from said imaged test pattern; and
d) means of processing the signals corresponding to said reflected radiation to determine optimal adjustment of the imaging parameters of said apparatus.

25. (New) The method of claim 1 comprising varying said imaging process parameter with position in said test pattern.

26. (New) The method of claim 25 wherein said analysing step comprises performing a mathematical curve fit to the measurements of said reflected radiation.

27. (New) A method for controlling a machine for making lithographic printing plates, the machine having one or more controllable parameters, the method comprising:

imaging a test pattern onto a lithographic printing precursor and adjusting the one or more controllable parameters so that a plurality of different areas within the test pattern correspond to different values of the one or more controllable parameters;

converting the lithographic printing precursor into a lithographic printing surface;

measuring reflectivity of the test pattern at least within the plurality of different areas; and,

based upon the measured reflectivities automatically determining an optimized value for at least one of the one or more controllable parameters.

28. (New) A method according to claim 27 comprising automatically setting the value of the at least one of the controllable parameters to have the optimized value.

29. (New) A method according to claim 27 wherein the at least one of the controllable parameters comprises a relative power of a plurality of radiation beams used to create the test pattern.

30. (New) A method according to claim 27 wherein the at least one of the controllable parameters comprises a parameter related to the focusing of at least one radiation beam used to create the test pattern.

31. (New) A method according to claim 30 wherein determining the optimized value comprises identifying a value for the focus parameter corresponding to a minimum in the reflectivity.

32. (New) A method according to claim 31 comprising fitting a curve to the measurements of reflectivity and determining a location on the fitted curve corresponding to minimum reflectivity.

33. (New) A method according to claim 27 wherein the at least one of the controllable parameters comprises a power of at least one radiation beam used to create the test pattern.

34. (New) A method according to claim 33 wherein determining the optimized value comprises identifying a transition point in the reflectivity.

35. (New) A method according to claim 34 wherein determining the optimized value comprises computing the optimized value by applying an exposure factor to the transition point.

36. (New) A method according to claim 34 wherein identifying the transition point comprises fitting a curve to the measured reflectivity and locating an inflection point in the fitted curve.

37. (New) A method according to claim 27 wherein imaging the test pattern is performed with multiple radiation beams;

the at least one of the controllable parameters comprises a power balance between the multiple radiation beams;

the method comprises modulating a power of at least one of the multiple radiation beams in a recognizable pattern and identifying a swath corresponding to the at least one of the multiple radiation beams by detecting the recognizable pattern in the measured reflectivity.